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IN THE CLAIMS:

- 1 1. (Original) A method of tracing the activity of an expression, said method comprising
2 the steps of:
3 (a) specifying a machine-implemented process in which a trigger expression is
4 to be traced;
5 (b) specifying the trigger expression to be traced in the machine-implemented
6 process;
7 (c) storing the state of the trigger expression when it is active within the
8 machine-implemented process without interrupting the process; and
9 (d) restoring the state of the trigger expression when requested.
- 1 2. (Original) The method of claim 1, further comprising:
2 (a) imposing a condition onto the trigger expression; and
3 (b) storing the state of the trigger expression only when the condition is satisfied.
- 1 3. (Original) The method of claim 1, wherein the step of storing the state of the trigger
2 expression further comprises:
3 (a) creating a history of the trigger expression comprising storing each state of
4 the trigger expression when it is active.
- 1 4. (Original) The method of claim 3, further comprising:
2 (a) displaying the history such that the state of the trigger expression each time
3 the trigger expression was active can be displayed separately.

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- 1 5. (Original) The method of claim 1, wherein the trigger expression is one which results
2 in an L value during the machine-implemented process.
- 1 6. (Original) The method of claim 5, wherein the activity is a call to a memory location
2 of the trigger expression.
- 1 7. (Original) The method of claim 6, wherein the call to a memory location is a Read
2 and/or a Write.
- 1 8. (Original) The method of claim 1, further comprising:
2 (a) specifying at least one attached expression;
3 (b) storing the state of the at least one attached expression when the trigger
4 expression is active within the machine-implemented process; and
5 (c) restoring the state of the at least one attached expression when requested.
- 1 9. (Original) The method of claim 1, wherein the machine-implemented process is a
2 computer program.
- 1 10. (Original) The method of claim 1, as included in an object level trace program.
- 1 11. (Original) The method of claim 1, as included in a debug program.

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1 12. (Original) A method of tracing the activity of an expression in an executing computer
2 program, said method comprising the steps of:

- 3 (a) specifying the computer program in which a trigger expression resulting in
4 an L value during the execution of the computer program is to be traced;
5 (b) specifying the trigger expression and any optional attachment expressions to
6 be traced in the computer program;
7 (c) imposing a condition onto the trigger expression;
8 (d) storing the state of the trigger expression and any optional attachment
9 expressions when the computer program has accessed a location in memory
10 pertaining to the trigger expression and the conditions are satisfied to create
11 a snapshot, the step of storing accomplished without interrupting the process;
12 (e) creating a profile of the trigger expression comprising storing each snapshot;
13 (f) displaying the profile such that each snapshot can be displayed separately;
14 and
15 (g) restoring the state of each snapshot, when requested.

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1 13. (Currently Amended) A tracing device, comprising:

- 2 (a) a memory functionally connected to ~~the digital~~ a digital logic device capable
3 of executing a sequence of instructions;
4 (b) a program to monitor the activity of an expression during the execution of the
5 sequence of instructions;
6 (c) a snapshot of the state of the expression every time the expression is active
7 during the execution of the sequence of instructions;
8 (d) a history stored in the memory, the history being a plurality of snapshots;
9 (e) a state restorer which restores the state of the expression in a snapshot;
10 (f) a user interface by which a user may interact with the program, a snapshot,
11 and the history.

1 14. (Currently Amended) The tracing device of claim 13 as incorporated into ~~an debug~~
2 a debug program to debug the sequence of instructions.

1 15. (Original) The tracing device of claim 13 as incorporated into an object trace program.

1 16. (Original) The tracing device of claim 13, further comprising an attachment
2 expression profiler which stores the state at least one attachment expression with each
3 snapshot.

1 17. (Original) The tracing device of claim 13, wherein the tracing device and the digital
2 logic device are incorporated into the same computer.

1 18. (Original) The tracing device of claim 13, wherein the tracing device and the digital
2 logic device are separate units connected by a data communications link.

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- 1 19. (Original) A processing device to trace the activity of an expression in a computer
2 device, said processing device, comprising:
- 3 (a) a processor;
- 4 (b) a memory functionally connected to the processor;
- 5 (c) a first computer program executing by the processor in which the expression
6 is active;
- 7 (d) a second computer program to trace the activity of the expression within the
8 memory during the execution of first computer program;
- 9 (e) a snapshot which stores the state expression every time the expression is
10 active during the execution of the first computer program;
- 11 (f) an attachment expression profiler which stores the state at least one
12 attachment expression with each snapshot;
- 13 (g) a history stored in the memory, the history being a plurality of snapshots;
- 14 (h) a display unit to display the history to a user; and
- 15 (i) an input device by which the user can input the expression to be traced.

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1 20. (Original) A profiler to record the profile of a particular expression/variable within a
2 program executing within a logical processing device, said profiler comprising:

3 (a) means to choose the particular expression/variable in a program executing
4 within the logical processing device;

5 (b) means to record a snapshot of the particular expression/variable whenever the
6 program addresses a memory location of the particular expression/variable
7 without interrupting the program;

8 (c) means to collect a plurality of snapshots into a profile of the particular
9 expression/variable, each snapshot corresponding to each time the program
10 addressed the memory location of the particular expression/variable;

11 (d) means to display the profile of the particular expression/variable.

1 21. (Original) The profiler of claim 20, further comprising:

2 (a) means to set at least one attachment expression active within the program;

3 (b) means to record the state of the at least one attachment expression whenever
4 a snapshot of the particular expression/variable is taken;

5 (c) means to attach each state of the at least one attachment expression to the
6 snapshot of the particular expression/variable when taken; and

7 (d) means to display the profile of the at least one attachment expression to a
8 user.

1 22. (Original) The profiler of claim 20, further comprising:

2 (a) means to delete the profile.

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1 23. (Original) The profiler of claim 20, further comprising:

2 (a) means to change the particular expression/variable.

1 24. (Original) The profiler of claim 21, further comprising:

2 (a) means to change the at least one attachment expression.

1 25. (Original) An article of manufacture, comprising a data storage medium tangibly
2 embodying a program of machine readable instructions executable by an electronic
3 processing apparatus to perform method steps for operating an electronic processing
4 apparatus, said method steps comprising the steps of:

5 (a) initiating a user interface to exchange data input/output with a user and an
6 electronic processing apparatus;

7 (b) requesting a trigger expression from a user;

8 (c) requesting a program identification of a program in which the trigger
9 expression is to be traced;

10 (d) causing the electronic processing apparatus to execute the identified program;

11 (e) storing the state of the trigger expression each time a memory operation
12 occurs to the trigger expression during the executing identified program
13 without interrupting or otherwise stopping execution of the identified
14 program as a snapshot;

15 (f) maintaining the capability to restore each snapshot and display each snapshot
16 to the user.

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1 26. (Original) The article of manufacture of claim 25, further comprising:
2 (a) requesting the user to assign conditions to the trigger expression whereupon
3 when the conditions are satisfied, a snapshot of the trigger expression is
4 stored.

1 27. (Original) The article of manufacture of claim 25, further comprising:
2 (a) requesting the user to indicate attached expression whose states are also
3 stored in a corresponding snapshot whenever a snapshot is stored for the
 trigger expression.

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